



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/589,055	06/07/2000	Robert Rasmussen	2008.002800/99-0256.00	8477

23720 7590 03/10/2005

WILLIAMS, MORGAN & AMERSON, P.C.
10333 RICHMOND, SUITE 1100
HOUSTON, TX 77042

EXAMINER

PIZIALI, ANDREW T

ART UNIT	PAPER NUMBER
----------	--------------

1771

DATE MAILED: 03/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/589,055	Applicant(s) RASMUSSEN ET AL.	
	Examiner Andrew T Piziali	Art Unit 1771	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 January 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-54 is/are pending in the application.
- 4a) Of the above claim(s) 1-15 and 38-47 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 16-37 and 48-54 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 June 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. The amendment filed on 1/24/2005 has been entered. The examiner has withdrawn the 35 USC 112 second paragraph rejections of claims 28 and 29 based on the amendments to claims 28 and 29.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 16-37 and 53-54 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claims contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention.

The specification is silent in regards to “immersing” the substrate into a binder solution. The specification does not include any form of the word “immerse.” Immersing suggests that an object is “thrust or thrown into” a liquid (see cited dictionary definition). The specification does not mention thrusting or throwing the substrate, in fact, the specification teaches that the substrate is “lowered” into the binder solution (see page 10, line 12). The difference between “immersing” compared to “submerging” is significant because the rate of inserting and/or removing the substrate from the binder solution directly affects the strength at which the phosphor particles are bound to the substrate.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 16-19, 21, 23-31, 33, 35-37, 48, 50 and 52-54 are rejected under 35 U.S.C. 102(b) as being anticipated by USPN 3,763,051 to Spiegel et al. (hereinafter referred to as Spiegel).

Regarding claims 16-19, 21, 23-31, 33, 35-37, 48, 50 and 52-54, Spiegel discloses a substrate comprising an anode electrode wherein phosphor particles are bonded to the anode electrode by submerging the substrate into a phosphor binder solution, and removing the substrate from the binder solution (see entire document). The applicant admits that the vinyl sheet of Spiegel is “immersed” in the binder solution (see page 16, lines 16-17, page 17, lines 4-7, and page 18, line 15, of the amendment filed on 1/24/2005).

Spiegel does not specifically mention removing the substrate from the binder at a predetermined rate, but it is the examiner’s position that the article of the applied prior art is identical to or only slightly different than the claimed article. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985). The burden has been shifted to the applicant to show obvious difference between the claimed product and the prior art product. *In re Marosi*,

Art Unit: 1771

218 USPQ 289 (Fed. Cir. 1983). The applied prior art either anticipated or strongly suggested the claimed subject matter. It is noted that if the applicant intends to rely on Examples in the specification or in a submitted declaration to show non-obviousness, the applicant should clearly state how the Examples of the present invention are commensurate in scope with the claims and how the Comparative Examples are commensurate in scope with the applied prior art.

Regarding claims 18, 23-24, 36-37 and 53-54, Spiegel discloses that the substrate may be fired at a temperature between 400 and 500°C (column 2, lines 6-8 and lines 38-41).

Regarding claims 19, 21, 33 and 50, Spiegel discloses that the binder solution may comprise potassium silicate and water (paragraph bridging columns 1 and 2).

Regarding claims 25-30, Spiegel does not mention a dip coating step with the claimed non-aqueous solution, but on page 9, line 1 through page 10, line 8, of the current specification, the applicant discloses that the claimed dip coating step simply deposits phosphor particles on the surface of the substrate subsequent to the dip coating binding process. The applicant discloses that in addition to a phosphor screening process the adherence of the phosphor particles to the substrate may be accomplished via alternative methods known to those of ordinary skill in the art. Rather than depositing the phosphor particles on the substrate in a first dip coating step and then binding the phosphor particles to the substrate and to each other in a second dip coating step, Spiegel includes phosphor particles in the phosphor binder solution (paragraph bridging columns 1 and 2). Spiegel discloses that this phosphor particle deposition process results in a uniform layer of phosphor particles deposited on the surface of the substrate (column 1, lines 19-23). It is the examiner's position that the article of the applied prior art is identical to or only

Art Unit: 1771

slightly different than the claimed article. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 16-19, 21, 23-31, 33, 35-37, 48, 50 and 52-54 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 3,763,051 to Speigel in view of USPN 6,214,419 to Dinh et al. (hereinafter referred to as Dinh).

Regarding claims 16-19, 21, 23-31, 33, 35-37, 48, 50 and 52-54, Speigel discloses a substrate comprising an anode electrode wherein phosphor particles are bonded to the anode electrode by submerging the substrate into a phosphor binder solution, and removing the substrate from the binder solution (see entire document).

Speigel is silent with regards to the rate of removal of the substrate from the binder solution, therefore, it would have been obvious to look to the prior art for a teaching concerning take-up speeds. Dinh provides this teaching disclosing that it is known that a coating thickness generally increases with the coating material concentration and with the take-up speed (column 1, lines 37-47 and column 6, lines 14-20). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to vary the take-up speed based on the concentration of the coating and based on the desired coating thickness, motivated by the expectation of successfully practicing the invention of Speigel.

Art Unit: 1771

Regarding claim 18, 23-24, 36-37 and 53-54, Spiegel discloses that the substrate may be fired at a temperature between 400 and 500°C (column 2, lines 6-8 and lines 38-41).

Regarding claims 19, 21, 33 and 50, Spiegel discloses that the binder solution may comprise potassium silicate and water (paragraph bridging columns 1 and 2).

Regarding claims 25-30, Spiegel does not mention a dip coating step with the claimed non-aqueous solution, but on page 9, line 1 through page 10, line 8, of the current specification, the applicant discloses that the claimed dip coating step simply deposits phosphor particles on the surface of the substrate subsequent to the dip coating binding process. The applicant discloses that in addition to a phosphor screening process the adherence of the phosphor particles to the substrate may be accomplished via alternative methods known to those of ordinary skill in the art. Rather than depositing the phosphor particles on the substrate in a first dip coating step and then binding the phosphor particles to the substrate and to each other in a second dip coating step, Spiegel includes phosphor particles in the phosphor binder solution (paragraph bridging columns 1 and 2). Spiegel discloses that this phosphor particle deposition process results in a uniform layer of phosphor particles deposited on the surface of the substrate (column 1, lines 19-23). It is the examiner's position that the article of the applied prior art is identical to or only slightly different than the claimed article. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself.

8. Claims 20, 32 and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 3,763,051 to Spiegel as applied to claims 16-19, 21, 23-31, 33, 35-37, 48, 50 and 52-54 above, and further in view of USPN 4,293,586 to Unnai et al. (hereinafter referred to as Unnai).

Art Unit: 1771

Speigel does not mention a specific potassium silicate weight percentage range. Since Speigel is silent with regards to a specific potassium silicate weight percentage range, it would have been necessary and thus obvious to look to the prior art for conventional potassium silicate weight percentage ranges. Unnai provides this conventional teaching showing that it is known in the art that the adhesive property of a phosphor layer is improved when 0.05 to 0.5 weight percent potassium silicate is utilized (see entire document including column 4, lines 41-57). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use 0.05 to 0.5 weight percent potassium silicate, as taught by Unnai, motivated by the expectation of successfully practicing the invention of Speigel.

9. Claims 20, 32 and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 3,763,051 to Speigel in view of USPN 6,214,419 to Dinh as applied to claims 16-19, 21, 23-31, 33, 35-37, 48, 50 and 52-54 above, and further in view of USPN 4,293,586 to Unnai.

Speigel does not mention a specific potassium silicate weight percentage range. Since Speigel is silent with regards to a specific potassium silicate weight percentage range, it would have been necessary and thus obvious to look to the prior art for conventional potassium silicate weight percentage ranges. Unnai provides this conventional teaching showing that it is known in the art that the adhesive property of a phosphor layer is improved when 0.05 to 0.5 weight percent potassium silicate is utilized (see entire document including column 4, lines 41-57). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use 0.05 to 0.5 weight percent potassium silicate, as taught by Unnai, motivated by the expectation of successfully practicing the invention of Speigel.

Art Unit: 1771

10. Claims 22, 34 and 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 3,763,051 to Speigel as applied to claims 16-19, 21, 23-31, 33, 35-37, 48, 50 and 52-54 above, and further in view of USPN 5,723,070 to Kim et al. (hereinafter referred to as Kim).

Speigel discloses that the binder solution may comprise potassium silicate and alcohol (paragraph bridging columns 1 and 2), but Speigel does not specifically mention an organo silicate. Kim discloses that it is known in the display device art that potassium silicate and ethyl silicate (an organo silicate) are functionally equivalent interchangeable binders (see entire document including column 1, line 65 through column 2, line 51). It would have been obvious to one having ordinary skill in the art at the time the invention was made to substitute the potassium silicate binder with an ethyl silicate binder, as taught by Kim, because it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability.

11. Claims 22, 34 and 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 3,763,051 to Speigel in view of USPN 6,214,419 to Dinh as applied to claims 16-19, 21, 23-31, 33, 35-37, 48, 50 and 52-54 above, and further in view of USPN 5,723,070 to Kim.

Speigel discloses that the binder solution may comprise potassium silicate and alcohol (paragraph bridging columns 1 and 2), but Speigel does not specifically mention an organo silicate. Kim discloses that it is known in the display device art that potassium silicate and ethyl silicate (an organo silicate) are functionally equivalent interchangeable binders (see entire document including column 1, line 65 through column 2, line 51). It would have been obvious to one having ordinary skill in the art at the time the invention was made to substitute the potassium silicate binder with an ethyl silicate binder, as taught by Kim, because it has been held to be

Art Unit: 1771

within the general skill of a worker in the art to select a known material on the basis of its suitability.

12. Claims 26-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 3,763,051 to Spiegel as applied to claims 16-19, 21, 23-31, 33, 35-37, 48, 50 and 52-54 above, and further in view of any one of USPN 5,200,233 to Mohacsi and USPN 5,569,485 to Dahlquist et al. (hereinafter referred to as Dahlquist), in view of any one of USPN 4,365,184 to Higton et al. (hereinafter referred to as Higton) and USPN 4,983,847 to Bryan et al. (hereinafter referred to as Bryan).

Spiegel discloses the presence of isopropyl alcohol (paragraph bridging columns 1 and 2), but Spiegel does not mention the additional use of glycerol in the binder solution. Mohacsi and Dahlquist each discloses that it is known in the art to add glycerol to a phosphor binding solution to improve the viscosity and/or provide antistatic protection (see entire document of Mohacsi including column 2, lines 34-43 and column 4, lines 3-30, see entire document of Dahlquist including column 3, line 52 through column 4, line 44). It would have been obvious to one having ordinary skill in the art at the time the invention was made to add glycerol to the binder solution of Spiegel, as taught by each of Mohacsi and Dahlquist, because the glycerol would improve the viscosity and/or provide antistatic protection.

Spiegel does not mention the use of an indium nitrate electrolyte, but Higton, and Bryan each disclose that it is known in the art to add an indium nitrate electrolyte to a phosphor binding solution to increase prompt emission, reduce afterglow, and/or increase electroluminescence (see entire document of Higton including column 1, lines 8-40, and see entire document of Bryan including Examples 86-93). It would have been obvious to one having ordinary skill in the art at

Art Unit: 1771

the time the invention was made to add an electrolyte to the binder solution of Speigel, as taught by each of Higton, and Bryan, because the electrolyte would increase prompt emission, reduce afterglow, and/or increase electroluminescence.

Speigel does not mention a dip coating step with the claimed non-aqueous solution, but on page 9, line 1 through page 10, line 8, of the current specification, the applicant discloses that the claimed dip coating step simply deposits phosphor particles on the surface of the substrate subsequent to the dip coating binding process. The applicant discloses that in addition to a phosphor screening process the adherence of the phosphor particles to the substrate may be accomplished via alternative methods known to those of ordinary skill in the art. Rather than depositing the phosphor particles on the substrate in a first dip coating step and then binding the phosphor particles to the substrate and to each other in a second dip coating step, Speigel includes phosphor particles in the phosphor binder solution (paragraph bridging columns 1 and 2). Speigel discloses that this phosphor particle deposition process results in a uniform layer of phosphor particles deposited on the surface of the substrate (column 1, lines 19-23). It is the examiner's position that the article of the applied prior art is identical to or only slightly different than the claimed article. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself.

13. Claims 26-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 3,763,051 to Speigel in view of USPN 6,214,419 to Dinh as applied to claims 16-19, 21, 23-31, 33, 35-37, 48, 50 and 52-54 above, and further in view of any one of USPN 5,200,233 to Mohacsi and USPN 5,569,485 to Dahlquist, in view of any one of USPN 4,365,184 to Higton, and USPN 4,983,847 to Bryan.

Art Unit: 1771

Speigel discloses the presence of isopropyl alcohol (paragraph bridging columns 1 and 2), but Spiegel does not mention the additional use of glycerol in the binder solution. Mohacsi and Dahlquist each discloses that it is known in the art to add glycerol to a phosphor binding solution to improve the viscosity and/or provide antistatic protection (see entire document of Mohacsi including column 2, lines 34-43 and column 4, lines 3-30, see entire document of Dahlquist including column 3, line 52 through column 4, line 44). It would have been obvious to one having ordinary skill in the art at the time the invention was made to add glycerol to the binder solution of Spiegel, as taught by each of Mohacsi and Dahlquist, because the glycerol would improve the viscosity and/or provide antistatic protection.

Speigel does not mention the use of an indium nitrate electrolyte, but Higton, and Bryan each disclose that it is known in the art to add an indium nitrate electrolyte to a phosphor binding solution to increase prompt emission, reduce afterglow, and/or increase electroluminescence (see entire document of Higton including column 1, lines 8-40, and see entire document of Bryan including Examples 86-93). It would have been obvious to one having ordinary skill in the art at the time the invention was made to add an electrolyte to the binder solution of Spiegel, as taught by each of Higton, and Bryan, because the electrolyte would increase prompt emission, reduce afterglow, and/or increase electroluminescence.

Speigel does not mention a dip coating step with the claimed non-aqueous solution, but on page 9, line 1 through page 10, line 8, of the current specification, the applicant discloses that the claimed dip coating step simply deposits phosphor particles on the surface of the substrate subsequent to the dip coating binding process. The applicant discloses that in addition to a phosphor screening process the adherence of the phosphor particles to the substrate may be

Art Unit: 1771

accomplished via alternative methods known to those of ordinary skill in the art. Rather than depositing the phosphor particles on the substrate in a first dip coating step and then binding the phosphor particles to the substrate and to each other in a second dip coating step, Spiegel includes phosphor particles in the phosphor binder solution (paragraph bridging columns 1 and 2). Spiegel discloses that this phosphor particle deposition process results in a uniform layer of phosphor particles deposited on the surface of the substrate (column 1, lines 19-23). It is the examiner's position that the article of the applied prior art is identical to or only slightly different than the claimed article. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself.

14. Claims 26 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 3,763,051 to Spiegel as applied to claims 16-19, 21, 23-31, 33, 35-37, 48, 50 and 52-54 above, and further in view of any one of USPN 5,200,233 to Mohacsi and USPN 5,569,485 to Dahlquist, in view of USPN 3,617,743 to Rabatin.

Speigel discloses the presence of isopropyl alcohol (paragraph bridging columns 1 and 2), but Spiegel does not mention the use of glycerol in the binder solution. Mohacsi and Dahlquist each discloses that it is known in the art to add glycerol to a phosphor binding solution to improve the viscosity and/or provide antistatic protection (see entire document of Mohacsi including column 2, lines 34-43 and column 4, lines 3-30, see entire document of Dahlquist including column 3, line 52 through column 4, line 44). It would have been obvious to one having ordinary skill in the art at the time the invention was made to add glycerol to the binder solution of Spiegel, as taught by Mohacsi and Dahlquist, because the glycerol would improve the viscosity and/or provide antistatic protection.

Art Unit: 1771

Speigel does not mention the use of a cerium nitrate electrolyte, but Rabatin discloses that it is known in the art to add cerium to a phosphor binding solution to increase sensitivity (see entire document of Rabatin including the abstract). It would have been obvious to one having ordinary skill in the art at the time the invention was made to add cerium to the binder solution of Speigel, as taught by each of Rabatin, because the cerium would increase sensitivity.

Speigel does not mention a dip coating step with the claimed non-aqueous solution, but on page 9, line 1 through page 10, line 8, of the current specification, the applicant discloses that the claimed dip coating step simply deposits phosphor particles on the surface of the substrate subsequent to the dip coating binding process. The applicant discloses that in addition to a phosphor screening process the adherence of the phosphor particles to the substrate may be accomplished via alternative methods known to those of ordinary skill in the art. Rather than depositing the phosphor particles on the substrate in a first dip coating step and then binding the phosphor particles to the substrate and to each other in a second dip coating step, Speigel includes phosphor particles in the phosphor binder solution (paragraph bridging columns 1 and 2). Speigel discloses that this phosphor particle deposition process results in a uniform layer of phosphor particles deposited on the surface of the substrate (column 1, lines 19-23). It is the examiner's position that the article of the applied prior art is identical to or only slightly different than the claimed article. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself.

15. Claims 26 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 3,763,051 to Speigel in view of USPN 6,214,419 to Dinh as applied to claims 16-19, 21, 23-31,

Art Unit: 1771

33, 35-37, 48, 50 and 52-54 above, and further in view of any one of USPN 5,200,233 to Mohacsi and USPN 5,569,485 to Dahlquist, in view of USPN 3,617,743 to Rabatin.

Speigel discloses the presence of isopropyl alcohol (paragraph bridging columns 1 and 2), but Spiegel does not mention the use of glycerol in the binder solution. Mohacsi and Dahlquist each discloses that it is known in the art to add glycerol to a phosphor binding solution to improve the viscosity and/or provide antistatic protection (see entire document of Mohacsi including column 2, lines 34-43 and column 4, lines 3-30, see entire document of Dahlquist including column 3, line 52 through column 4, line 44). It would have been obvious to one having ordinary skill in the art at the time the invention was made to add glycerol to the binder solution of Spiegel, as taught by Mohacsi and Dahlquist, because the glycerol would improve the viscosity and/or provide antistatic protection..

Speigel does not mention the use of a cerium nitrate electrolyte, but Rabatin discloses that it is known in the art to add cerium to a phosphor binding solution to increase sensitivity (see entire document of Rabatin including the abstract). It would have been obvious to one having ordinary skill in the art at the time the invention was made to add cerium to the binder solution of Spiegel, as taught by each of Rabatin, because the cerium would increase sensitivity.

Speigel does not mention a dip coating step with the claimed non-aqueous solution, but on page 9, line 1 through page 10, line 8, of the current specification, the applicant discloses that the claimed dip coating step simply deposits phosphor particles on the surface of the substrate subsequent to the dip coating binding process. The applicant discloses that in addition to a phosphor screening process the adherence of the phosphor particles to the substrate may be accomplished via alternative methods known to those of ordinary skill in the art. Rather than

Art Unit: 1771

depositing the phosphor particles on the substrate in a first dip coating step and then binding the phosphor particles to the substrate and to each other in a second dip coating step, Spiegel includes phosphor particles in the phosphor binder solution (paragraph bridging columns 1 and 2). Spiegel discloses that this phosphor particle deposition process results in a uniform layer of phosphor particles deposited on the surface of the substrate (column 1, lines 19-23). It is the examiner's position that the article of the applied prior art is identical to or only slightly different than the claimed article. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself.

16. Claims 26 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 3,763,051 to Spiegel as applied to claims 16-19, 21, 23-31, 33, 35-37, 48, 50 and 52-54 above, and further in view of any one of USPN 5,200,233 to Mohacsi and USPN 5,569,485 to Dahlquist, in view of USPN 4,365,184 to Higton.

Spiegel discloses the presence of isopropyl alcohol (paragraph bridging columns 1 and 2), but Spiegel does not mention the use of glycerol in the binder solution. Mohacsi and Dahlquist each discloses that it is known in the art to add glycerol to a phosphor binding solution to improve the viscosity and/or provide antistatic protection (see entire document of Mohacsi including column 2, lines 34-43 and column 4, lines 3-30, see entire document of Dahlquist including column 3, line 52 through column 4, line 44). It would have been obvious to one having ordinary skill in the art at the time the invention was made to add glycerol to the binder solution of Spiegel, as taught by Mohacsi and Dahlquist, because the glycerol would improve the viscosity and/or provide antistatic protection.

Art Unit: 1771

Speigel does not mention the use of a thorium nitrate electrolyte, but Higton discloses that it is known in the art to add thorium to a phosphor binding solution to increase electroluminescence (see entire document of Higton including column 1, lines 8-40). It would have been obvious to one having ordinary skill in the art at the time the invention was made to add thorium to the binder solution of Speigel, as taught by Higton, because the thorium would increase electroluminescence.

Speigel does not mention a dip coating step with the claimed non-aqueous solution, but on page 9, line 1 through page 10, line 8, of the current specification, the applicant discloses that the claimed dip coating step simply deposits phosphor particles on the surface of the substrate subsequent to the dip coating binding process. The applicant discloses that in addition to a phosphor screening process the adherence of the phosphor particles to the substrate may be accomplished via alternative methods known to those of ordinary skill in the art. Rather than depositing the phosphor particles on the substrate in a first dip coating step and then binding the phosphor particles to the substrate and to each other in a second dip coating step, Speigel includes phosphor particles in the phosphor binder solution (paragraph bridging columns 1 and 2). Speigel discloses that this phosphor particle deposition process results in a uniform layer of phosphor particles deposited on the surface of the substrate (column 1, lines 19-23). It is the examiner's position that the article of the applied prior art is identical to or only slightly different than the claimed article. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself.

17. Claims 26 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 3,763,051 to Speigel in view of USPN 6,214,419 to Dinh as applied to claims 16-19, 21, 23-31,

Art Unit: 1771

33, 35-37, 48, 50 and 52-54 above, and further in view of any one of USPN 5,200,233 to Mohacsi and USPN 5,569,485 to Dahlquist, in view of USPN 4,365,184 to Higton.

Speigel discloses the presence of isopropyl alcohol (paragraph bridging columns 1 and 2), but Spiegel does not mention the use of glycerol in the binder solution. Mohacsi and Dahlquist each discloses that it is known in the art to add glycerol to a phosphor binding solution to improve the viscosity and/or provide antistatic protection (see entire document of Mohacsi including column 2, lines 34-43 and column 4, lines 3-30, see entire document of Dahlquist including column 3, line 52 through column 4, line 44). It would have been obvious to one having ordinary skill in the art at the time the invention was made to add glycerol to the binder solution of Spiegel, as taught by Mohacsi and Dahlquist, because the glycerol would improve the viscosity and/or provide antistatic protection.

Speigel does not mention the use of a thorium nitrate electrolyte, but Higton discloses that it is known in the art to add thorium to a phosphor binding solution to increase electroluminescence (see entire document of Higton including column 1, lines 8-40). It would have been obvious to one having ordinary skill in the art at the time the invention was made to add thorium to the binder solution of Spiegel, as taught by Higton, because the thorium would increase electroluminescence.

Speigel does not mention a dip coating step with the claimed non-aqueous solution, but on page 9, line 1 through page 10, line 8, of the current specification, the applicant discloses that the claimed dip coating step simply deposits phosphor particles on the surface of the substrate subsequent to the dip coating binding process. The applicant discloses that in addition to a phosphor screening process the adherence of the phosphor particles to the substrate may be

Art Unit: 1771

accomplished via alternative methods known to those of ordinary skill in the art. Rather than depositing the phosphor particles on the substrate in a first dip coating step and then binding the phosphor particles to the substrate and to each other in a second dip coating step, Spiegel includes phosphor particles in the phosphor binder solution (paragraph bridging columns 1 and 2). Spiegel discloses that this phosphor particle deposition process results in a uniform layer of phosphor particles deposited on the surface of the substrate (column 1, lines 19-23). It is the examiner's position that the article of the applied prior art is identical to or only slightly different than the claimed article. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself.

18. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 3,763,051 to Spiegel as applied to claims 16-19, 21, 23-31, 33, 35-37, 48, 50 and 52-54 above, and further in view of any one of USPN 4,365,184 to Higton, USPN 4,983,847 to Bryan, and USPN 3,617,743 to Rabatin.

Spiegel does not mention the use of an electrolyte, but Higton, Bryan and Rabatin each disclose that it is known in the art to add an electrolyte to a phosphor binding solution to increase prompt emission, reduce afterglow, increase electroluminescence and/or increase sensitivity (see entire document of Higton including column 1, lines 8-40, see entire document of Bryan including Examples 86-93, and see entire document of Rabatin including the abstract). It would have been obvious to one having ordinary skill in the art at the time the invention was made to add an electrolyte to the binder solution of Spiegel, as taught by each of Higton, Bryan and Rabatin, because the electrolyte would increase prompt emission, reduce afterglow, increase electroluminescence and/or increase sensitivity.

Art Unit: 1771

Speigel does not mention a dip coating step with the claimed non-aqueous solution, but on page 9, line 1 through page 10, line 8, of the current specification, the applicant discloses that the claimed dip coating step simply deposits phosphor particles on the surface of the substrate subsequent to the dip coating binding process. The applicant discloses that in addition to a phosphor screening process the adherence of the phosphor particles to the substrate may be accomplished via alternative methods known to those of ordinary skill in the art. Rather than depositing the phosphor particles on the substrate in a first dip coating step and then binding the phosphor particles to the substrate and to each other in a second dip coating step, Speigel includes phosphor particles in the phosphor binder solution (paragraph bridging columns 1 and 2). Speigel discloses that this phosphor particle deposition process results in a uniform layer of phosphor particles deposited on the surface of the substrate (column 1, lines 19-23). It is the examiner's position that the article of the applied prior art is identical to or only slightly different than the claimed article. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself.

19. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 3,763,051 to Speigel in view of USPN 6,214,419 to Dinh as applied to claims 16-19, 21, 23-31, 33, 35-37, 48, 50 and 52-54 above, and further in view of any one of USPN 4,365,184 to Higton, USPN 4,983,847 to Bryan, and USPN 3,617,743 to Rabatin.

Speigel does not mention the use of an electrolyte, but Higton, Bryan and Rabatin each disclose that it is known in the art to add an electrolyte to a phosphor binding solution to increase prompt emission, reduce afterglow, increase electroluminescence and/or increase sensitivity (see entire document of Higton including column 1, lines 8-40, see entire document of Bryan

Art Unit: 1771

including Examples 86-93, and see entire document of Rabatin including the abstract). It would have been obvious to one having ordinary skill in the art at the time the invention was made to add an electrolyte to the binder solution of Speigel, as taught by each of Higton, Bryan and Rabatin, because the electrolyte would increase prompt emission, reduce afterglow, increase electroluminescence and/or increase sensitivity.

Speigel does not mention a dip coating step with the claimed non-aqueous solution, but on page 9, line 1 through page 10, line 8, of the current specification, the applicant discloses that the claimed dip coating step simply deposits phosphor particles on the surface of the substrate subsequent to the dip coating binding process. The applicant discloses that in addition to a phosphor screening process the adherence of the phosphor particles to the substrate may be accomplished via alternative methods known to those of ordinary skill in the art. Rather than depositing the phosphor particles on the substrate in a first dip coating step and then binding the phosphor particles to the substrate and to each other in a second dip coating step, Speigel includes phosphor particles in the phosphor binder solution (paragraph bridging columns 1 and 2). Speigel discloses that this phosphor particle deposition process results in a uniform layer of phosphor particles deposited on the surface of the substrate (column 1, lines 19-23). It is the examiner's position that the article of the applied prior art is identical to or only slightly different than the claimed article. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself.

Response to Arguments

20. Applicant's arguments filed 1/24/2005 have been fully considered but they are not persuasive.

Art Unit: 1771

The applicant asserts that Spiegel does not teach or suggest that a substrate is immersed in a binder solution. The applicant admits that Spiegel discloses that a vinyl sheet is dipped into a binder solution, but the applicant argues that a subsequently mentioned “metallic segment” is not immersed into the binder solution. The applicant appears to be arguing that a vinyl sheet is not a substrate. The examiner respectfully disagrees. A “substrate” is merely an underlying layer (see cited dictionary definition).

Conclusion

21. Applicant's amendment necessitated the new grounds of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

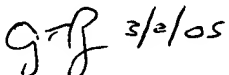
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew T Piziali whose telephone number is (571) 272-1541. The examiner can normally be reached on Monday-Friday (8:00-4:30).

Art Unit: 1771

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrel Morris can be reached on (571) 272-1478. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

atp


ANDREW T. PIZIALI
PATENT EXAMINER


TERREL MORRIS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700